AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior listings of claims in the application.

LISTING OF CLAIMS

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Currently Amended) An ~~The~~ image interpolation system ~~according to Claim 3,~~ for interpolating gaps between lines forming an image, comprising:

a virtual interpolation data generating means for generating virtual interpolation data of inter-lines between the lines of the input image, based on the input image line data;

an interpolation segment determining means for determining segments, based on the generated virtual interpolation data, to be interpolated between the input image lines and determining the direction of interpolation, for extracting matching patterns; and

an interpolating means which generates pre-interpolation pixels on the input image lines, based on the generated virtual interpolation data and the segment data determined to be interpolated, determined by the interpolation segment determining means, and

interpolates pixels between input image lines based on the generated pre-interpolation

pixels,

wherein the interpolation segment determining means comprises: a search condition

setup means for setting up a pattern search range; a matching pattern condition setup

means for setting up matching pattern conditions; and a first matching pattern searching

means for searching for matching patterns based on the conditions designated by the

search condition setup means and by the matching pattern condition setup means.

5. (Currently Amended) An The image interpolation system according to Claim 3,

for interpolating gaps between lines forming an image, comprising:

a virtual interpolation data generating means for generating virtual interpolation data

of inter-lines between the lines of the input image, based on the input image line data;

an interpolation segment determining means for determining segments, based on

the generated virtual interpolation data, to be interpolated between the input image lines

and determining the direction of interpolation, for extracting matching patterns; and

an interpolating means which generates pre-interpolation pixels on the input image

lines, based on the generated virtual interpolation data and the segment data determined to

be interpolated, determined by the interpolation segment determining means, and

interpolates pixels between input image lines based on the generated pre-interpolation

pixels,

wherein the interpolation segment determining means comprises: a search condition setup means for setting up a pattern search range; a matching pattern condition setup means for setting up matching pattern conditions; a first matching pattern searching means for searching matching patterns based on the conditions designated by the search condition setup means and by the matching pattern condition setup means; a directional vector extracting means for extracting the direction of the vector of the detected matching patterns; and a second matching pattern searching means for searching for matching patterns existing in the extracted direction of the vector, based on the conditions designated by the search condition setup means and by the matching pattern condition setup means.

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Original) The image interpolation system according to Claim 4, wherein the virtual interpolation data generated by the virtual interpolation data generating means is constructed of units of pixel-rows of data.

10. (Original) The image interpolation system according to Claim 5, wherein the virtual interpolation data generated by the virtual interpolation data generating means is constructed of units of pixel-rows of data.

11. (Currently Amended) An The image interpolation system according to Claim 1, for interpolating gaps between lines forming an image, comprising:

a virtual interpolation data generating means for generating virtual interpolation data of inter-lines between the lines of the input image, based on the input image line data; and

an interpolating means for interpolating the pixels between input image lines, based on the generated virtual interpolation data,

wherein the virtual interpolation data generating means comprises: an inter-pixel operating means for calculating the difference in pixel data between the pixels on the neighboring input image lines; and a normalizing means for classifying the pixels into multiple classes according to the calculated value of the difference in pixel data; and a pattern extracting means for extracting rows of pixels normalized and classified in an identical class as patterns.

12. (Currently Amended) An The image interpolation system according to Claim 2, for interpolating the gaps between the lines forming an image, comprising:

<u>a virtual interpolation data generating means for generating virtual interpolation data of inter-lines between the lines of the input image, based on the input image line data; and</u>

<u>and an interpolating means which, based on the generated virtual interpolation data, generates pre-interpolation pixels on the input image lines, and interpolates the pixels between input image lines above and below by performing mutual operations between pre-interpolation pixels generated on the input image lines above and below,</u>

wherein the virtual interpolation data generating means comprises: an inter-pixel operating means for calculating the difference in pixel data between the pixels on the neighboring input image lines: and a normalizing means for classifying the pixels into multiple classes according to the calculated value of the difference in pixel data: and a pattern extracting means for extracting rows of pixels normalized and classified in an identical class as patterns.

13. (Currently Amended) An ~~The~~ image interpolation system ~~according to Claim 3,~~ for interpolating gaps between lines forming an image, comprising:

a virtual interpolation data generating means for generating virtual interpolation data of inter-lines between the lines of the input image, based on the input image line data;

an interpolation segment determining means for determining segments, based on the generated virtual interpolation data, to be interpolated between the input image lines and determining the direction of interpolation, for extracting matching patterns; and

an interpolating means which generates pre-interpolation pixels on the input image lines, based on the generated virtual interpolation data and the segment data determined to be interpolated, determined by the interpolation segment determining means, and interpolates pixels between input image lines based on the generated pre-interpolation pixels,

wherein the virtual interpolation data generating means comprises: an inter-pixel operating means for calculating the difference in pixel data between the pixels on the neighboring input image lines: and a normalizing means for classifying the pixels into multiple classes according to the calculated value of the difference in pixel data: and a pattern extracting means for extracting rows of pixels normalized and classified in an identical class as patterns.

14. (Original) The image interpolation system according to Claim 4, wherein the virtual interpolation data generating means comprises: an inter-pixel operating means for

calculating the difference in pixel data between the pixels on the neighboring input image lines; and a normalizing means for classifying the pixels into multiple classes according to the calculated value of the difference in pixel data; and a pattern extracting means for extracting rows of pixels normalized and classified in an identical class as patterns.

15. (Original) The image interpolation system according to Claim 5, wherein the virtual interpolation data generating means comprises: an inter-pixel operating means for calculating the difference in pixel data between the pixels on the neighboring input image lines; and a normalizing means for classifying the pixels into multiple classes according to the calculated value of the difference in pixel data; and a pattern extracting means for extracting rows of pixels normalized and classified in an identical class as patterns.

16. (Currently amended) The image interpolation system according to Claims 6 through 9 and 10, wherein the virtual interpolation data generating means comprises: an inter-pixel operating means for calculating the difference in pixel data between the pixels on the neighboring input image lines; and a normalizing means for classifying the pixels into multiple classes according to the calculated value of the difference in pixel data; and a pattern extracting means for extracting rows of pixels normalized and classified in an identical class as patterns.

17. (Currently Amended) An ~~The~~ image interpolation system ~~according to Claim~~ ~~1~~ for interpolating gaps between lines forming an image, comprising:

a virtual interpolation data generating means for generating virtual interpolation data of inter-lines between the lines of the input image, based on the input image line data; and

an interpolating means for interpolating the pixels between input image lines, based on the generated virtual interpolation data,

wherein the virtual interpolation data generating means comprises: an inter-pixel operating means for calculating the difference in pixel data between the pixels on the neighboring input image lines; a normalizing means for classifying the pixels into multiple classes according to the calculated value of the difference in pixel data; a pattern extracting means for extracting rows of pixels normalized and classified in an identical class as patterns; and a coring means for judging the patterns extracted on the same line to be interpolated based on the predetermined threshold and editing them.

18. (Currently Amended) An ~~The~~ image interpolation system ~~according to Claim~~ ~~2,~~ for interpolating gaps between lines forming an image, comprising:

a virtual interpolation data generating means for generating virtual interpolation data of inter-lines between the lines of the input image, based on the input image line data; and

and an interpolating means which, based on the generated virtual interpolation

data, generates pre-interpolation pixels on the input image lines, and interpolates the

pixels between input image lines above and below by performing mutual operations

between pre-interpolation pixels generated on the input image lines above and below,

wherein the virtual interpolation data generating means comprises: an inter-pixel

operating means for calculating the difference in pixel data between the pixels on the

neighboring input image lines; a normalizing means for classifying the pixels into

multiple classes according to the calculated value of the difference in pixel data; a

pattern extracting means for extracting rows of pixels normalized and classified in an

identical class as patterns; and a coring means for judging the patterns extracted on the

same line to be interpolated based on the predetermined threshold and editing them.

19. (Currently Amended) An ~~The~~ image interpolation system ~~according to Claim 3,~~ for

interpolating gaps between lines forming an image, comprising:

a virtual interpolation data generating means for generating virtual interpolation data

of inter-lines between the lines of the input image, based on the input image line data;

an interpolation segment determining means for determining segments, based on

the generated virtual interpolation data, to be interpolated between the input image lines

and determining the direction of interpolation, for extracting matching patterns; and

an interpolating means which generates pre-interpolation pixels on the input image

lines, based on the generated virtual interpolation data and the segment data determined to

be interpolated, determined by the interpolation segment determining means, and interpolates pixels between input image lines based on the generated pre-interpolation pixels,

wherein the virtual interpolation data generating means comprises: an inter-pixel operating means for calculating the difference in pixel data between the pixels on the neighboring input image lines; a normalizing means for classifying the pixels into multiple classes according to the calculated value of the difference in pixel data; a pattern extracting means for extracting rows of pixels normalized and classified in an identical class as patterns; and a coring means for judging the patterns extracted on the same line to be interpolated based on the predetermined threshold and editing them.

20. (Original) The image interpolation system according to Claim 4, wherein the virtual interpolation data generating means comprises: an inter-pixel operating means for calculating the difference in pixel data between the pixels on the neighboring input image lines; a normalizing means for classifying the pixels into multiple classes according to the calculated value of the difference in pixel data; a pattern extracting means for extracting rows of pixels normalized and classified in an identical class as patterns; and a coring means for judging the patterns extracted on the same line to be interpolated based on the predetermined threshold and editing them.

21. (Original) The image interpolation system according to Claim 5, wherein the virtual interpolation data generating means comprises: an inter-pixel operating means for calculating the difference in pixel data between the pixels on the neighboring input image lines; a normalizing means for classifying the pixels into multiple classes according to the calculated value of the difference in pixel data; a pattern extracting means for extracting rows of pixels normalized and classified in an identical class as patterns; and a coring means for judging the patterns extracted on the same line to be interpolated based on the predetermined threshold and editing them.

22. (Original) The image interpolation system according to Claim 16, wherein the virtual interpolation data generating means comprises: an inter-pixel operating means for calculating the difference in pixel data between the pixels on the neighboring input image lines; a normalizing means for classifying the pixels into multiple classes according to the calculated value of the difference in pixel data; a pattern extracting means for extracting rows of pixels normalized and classified in an identical class as patterns; and a coring means for judging the patterns extracted on the same line to be interpolated based on the predetermined threshold and editing them.

23. (Original) The image interpolation system according to Claim 17, wherein the coring means comprises: an intra-pattern pixel operating means for calculating the average of the pixel differential values of individual pixels in each pattern; and a pattern editing

means for judging the average value based on the predetermined threshold and editing patterns.

24. (Original) The image interpolation system according to Claim 18, wherein the coring means comprises: an intra-pattern pixel operating means for calculating the average of the pixel differential values of individual pixels in each pattern; and a pattern editing means for judging the average value based on the predetermined threshold and editing patterns.

25. (Original) The image interpolation system according to Claim 19, wherein the coring means comprises: an intra-pattern pixel operating means for calculating the average of the pixel differential values of individual pixels in each pattern; and a pattern editing means for judging the average value based on the predetermined threshold and editing patterns.

26. (Original) The image interpolation system according to Claim 20, wherein the coring means comprises: an intra-pattern pixel operating means for calculating the average of the pixel differential values of individual pixels in each pattern; and a pattern editing means for judging the average value based on the predetermined threshold and editing patterns.

27. (Original) The image interpolation system according to Claim 21, wherein the coring means comprises: an intra-pattern pixel operating means for calculating the average of the pixel differential values of individual pixels in each pattern; and a pattern editing means for judging the average value based on the predetermined threshold and editing patterns.

28. (Original) The image interpolation system according to Claim 22, wherein the coring means comprises: an intra-pattern pixel operating means for calculating the average of the pixel differential values of individual pixels in each pattern; and a pattern editing means for judging the average value based on the predetermined threshold and editing patterns.

29. (Cancelled)

30. (Cancelled)

31. (Cancelled)

32. (New) An image interpolation system for interpolating an image in interpolation lines between input image lines, comprising:

generating and storing a virtual interpolation data in a database, wherein the virtual interpolation data includes starting position and length related to a virtual interpolation line pattern, which is generated based on an input image line data;

determining an interpolation segment in the interpolation line, based on the virtual interpolating data stored in the database, generating rows of pre-interpolation pixels in the input image lines, based on the virtual interpolation data and determined data of the interpolation segment; and

interpolating images in the input image lines, based on the rows of pre-interpolation pixels.

33. (New) The image interpolation system according to claim 32, wherein the virtual interpolation data is generated by a virtual interpolation line pattern generating means, and the interpolation segment is determined by an interpolation segment determining means, and generation of the pre-interpolation pixel-rows in the input image lines and interpolation of image in the interpolation lines are performed by an interpolation implementing means.

34. (New) The image interpolation system according to claim 32 or 33, wherein the virtual interpolation data generated by the virtual interpolation line pattern generating means is constructed for the input image of all lines.

35. (New) The image interpolation system according to claim 32 or 33, wherein the virtual interpolation line pattern generating means comprises:

an inter-pixel operating means for calculating the difference in pixel data between the pixels on the neighboring input image lines;

a normalizing means for classifying the pixels into multiple classes according to the calculated value of the difference in pixel data;

a pattern extracting means for extracting rows of pixels normalized and classified in an identical class as patterns; and

a coring means for judging the patterns extracted on the same line to be interpolated based on the predetermined threshold and editing them.

36. (New) The image interpolation system according to claim 35, wherein the coring means comprises:

an intra-pattern pixel operating means for calculating the average of the pixel differential values of individual pixels in each pattern; and

a pattern editing means for judging the average value based on the predetermined threshold and editing patterns.

37. (New) An image interpolation method for interpolating an image in interpolating lines between input image lines, comprising:

generating and storing a virtual interpolation data in a database, wherein the

virtual interpolation data includes starting position and length related to a virtual

interpolation line pattern, which is generated based on an input image line data;

determining an interpolation segment in the interpolation line, based on the

virtual interpolating data stored in the database;

generating rows of pre-interpolation pixels in the input image lines, based on the

virtual interpolation data and determined data of the interpolation segment; and

interpolating images in the input image lines, based on the rows of pre-

interpolation pixels.